

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

**In re Application of:  
Schmitt, et al.**

Serial No.: 10/812,717

Confirmation No : 3736

Filed: March 29, 2004

**For: Deposition of Low Dielectric Constant by N<sub>2</sub>O addition**

କବିତା ପରିଚୟ

Group Art Unit: 1709

Examiner: Lafond, Ronald D.

MAIL STOP AMENDMENT  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

**DECLARATION UNDER 35 C.F.R § 1.131**

We, the undersigned inventors, Francijmar C. Schmitt, Kimberly A. Branshaw, Padmanabhan Krishnaraj and Hichem M'Saad, in support of conception and reduction to practice of claimed subject matter prior to filing of the present application on March 29, 2004, hereby declare:

1. We are the inventors of the subject matter described and claimed in the present application filed on March 29, 2004. We have read and understand the application, including the currently pending claims;

2. We conceived of the subject matter of all claims pending in this application in the United States prior to October 16, 2003, the publication date of U.S. Patent Publication No. 2003/0194495 published to *Li, et al.*, hereinafter referred as the "Li'.

3. Our conception of the claimed subject matter of the pending claims prior to October 16, 2003, is evidenced by Exhibit A1, which is a graph illustrating film dielectric constants deposited by different ratios of nitrogen atom to OMCTS precursor, and by

Exhibit A2, which is an Excel spreadsheet regarding experimental conditions utilized, for depositing a low dielectric constant film using a cyclic organosiloxane and two or more oxidizing gases comprising N<sub>2</sub>O and O<sub>2</sub>, wherein a ratio of a flow rate of the N<sub>2</sub>O to a total flow rate of the two or more oxidizing gases is between about 0.1 and about 0.5;

4. The spreadsheet of Exhibit A1 and A2 was prepared prior to October 16, 2003. The selected experimental conditions listed in Exhibit A2 correspond to the measurement data shown in Exhibit B and Exhibit C. The test runs listed on Exhibit A2 is identified on Exhibit B and Exhibit C by their film thickness, showing that the experiments were conducted prior to October 16, 2003.

5. The experiments reported in the Excel spreadsheet shown in Exhibit A2 show actual reduction to practice in the United States of the claimed subject matter prior to October 16, 2003;

6. That all experiments resulting in the data reported in the Excel spreadsheet shown in Exhibit A2 were performed in the United States;

7. The experiment labeled as FSN-18 in Exhibit A2 utilized a N<sub>2</sub>O to a total flow ratio of 0.1714. The resultant film had a low dielectric constant of 2.82 and a thickness of 11375 Å. The measurement was completed prior to October 16, 2003, as shown in the first row of measurement data illustrated in Exhibit B;

8. The experiment labeled as FSN-17 in Exhibit A2 utilized a N<sub>2</sub>O to a total flow ratio of 0.3158. The resultant film had a low dielectric constant of 2.80 and a thickness of 11582 Å. The measurement was completed prior to October 16, 2003, as shown in the second row of measurement data illustrated in Exhibit B;

9. The experiment picked in the data line immediately under labeled FSN-17 in Exhibit A2 utilized a N<sub>2</sub>O to a total flow ratio of 0.4762. The resultant film had a low dielectric constant of 2.81 and having a thickness of 8145 Å. The measurement was completed prior to October 16, 2003, as shown in substrate measurement map illustrated in Exhibit C;

10. Thus, the data obtained prior to October 16, 2003, illustrates the use of a organosiloxane and a N<sub>2</sub>O to total flow rate of between about 0.1 and about 0.5 for depositing a low dielectric constant film.

11. We diligently pursued the subject matter of the pending claims from a time

beginning before October 16, 2003 until filing of the present application on March 29, 2004.

We further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

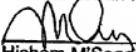
Date: January 16<sup>th</sup>, 2008



Franklin C. Schmitt

Kimberly A. Branshaw

Padmanabhan Krishnaraj



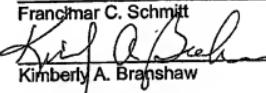
Hichem M'Saad

beginning before October 16, 2003 until filing of the present application on March 29, 2004.

We further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 1/15/08

Francimarc Schmitt

  
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Kimberly A. Branshaw

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Padmanabhan Krishnara]

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Hichem M'Saad